

WHAT IS CLAIMED IS:

1 1. A method comprising:

2 examining a set of services to identify two or more
3 parallel services performed by a common processor;

4 processing a defined number of data elements to
5 simulate a data flow through the set of services; and
6 determining an element ratio that defines the
7 portion of data elements processed by each of the
8 parallel services

9 defining a scheduling service that distributes the
10 data elements to each parallel service.

1 2. The method of claim 1 further comprising:

2 modifying the set of services to route the data
3 elements based on the element ratio.

1 3. The method of claim 2 wherein the common processor is a
2 packet engine.

1 4. The method of claim 1 further comprising:

2 determining an average processing time for each of
3 the parallel services, the average processing time
4 representing the average time that a parallel service
5 requires to process a single data element.

- 1 5. The method of claim 4 further comprising:
2 determining a time-ratio product for each of the
3 parallel services, the time-ratio product being based on
4 the mathematical product of the average processing time
5 and the element ratio.
- 1 6. The method of claim 5 further comprising:
2 comparing the time-ratio products of each parallel
3 process to determine a normalized ratio.
- 1 7. The method of claim 6 further comprising:
2 modifying the set of services to route the data
3 elements based on the normalized ratio.
- 1 8. The method of claim 7 further comprising:
2 defining a scheduling service that distributes the
3 data elements to each parallel service.
- 1 9. The method of claim 1 wherein the set of services is
2 represented by a data flow graph.
- 1 10. The method of claim 1 wherein each data element is a data
2 packet.
- 1 11. A computer program product residing on a computer
2 readable medium having a plurality of instructions stored

thereon which, when executed by the processor, cause that processor to:

examine a set of services to identify two or more parallel services performed by a common processor;
process a defined number of data elements to simulate a data flow through the set of services; and
determine an element ratio that defines the portion of data elements processed by each of the parallel services
define a scheduling service that distributes the data elements to each parallel service.

12. The computer program product of claim 11 further comprising instructions for:

modifying the set of services to route the data elements based on the element ratio.

13. The computer program product of claim 12 wherein the processor is a packet engine.

14. The computer program product of claim 11 further comprising instructions for:

determining an average processing time for each of the parallel services;

5 wherein the average processing time represents the
6 average time that a parallel service requires to process
7 a single data element.

1 15. The computer program product of claim 14 further
2 comprising instructions for:

3 determining a time-ratio product for each of the
4 parallel services;

5 wherein the time-ratio product is based on the
6 mathematical product of the average processing time and
7 the element ratio.

1 16. The computer program product of claim 15 further
2 comprising instructions for:

3 comparing the time-ratio products of each parallel
4 process to determine a normalized ratio.

1 17. The computer program product of claim 16 further
2 comprising instructions for:

3 modifying the set of services to route the data
4 elements based on the normalized ratio.

1 18. The computer program product of claim 17 further
2 comprising instructions for:

3 defining a scheduling service that distributes the
4 data elements to each parallel service.

1 19. The computer program product of claim 11 wherein the set
2 of services is represented by a data flow graph.

1 20. The computer program product of claim 11 wherein each
2 data element is a data packet.

1 21. A switch comprising:

2 a media access control (MAC) addressable device,
3 comprising:

4 a network processor including:

5 a plurality of packet engines for processing
6 packets;

7 a computer readable medium holding static
8 configuration rules that specify the manner in which
9 at least one of the packet engines is shared amongst
10 multiple services performed by the at least one
11 packet engine;

12 the configuration rules specifying a value that
13 defines a ratio of packets processed by the multiple
14 services to route data packets according to the
15 ratio amongst the multiple services executed by the
16 packet engine.

1 22. The switch of claim 21 further comprising:

2 a scheduling service that distributes packets to the
3 multiple parallel services according to the value
4 specified by the static configuration rules.

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